

# Contribution to the botany of Lahaul<sup>1</sup>

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(With two text-figures)

Lahaul comprises an area of 2820 sq. km lying between lat.  $30^{\circ} 8'$  and  $32^{\circ} 59' N$  and  $76^{\circ} 49' E$  in the district of Lahaul and Spiti in Himachal Pradesh. The adjoining areas are Ladakh in

the north, Kulu and Bara Bhangal in the south, Spiti sub-division on the east and Chamba district on the west (Fig. 1). The area has peculiar climatic and physical features and

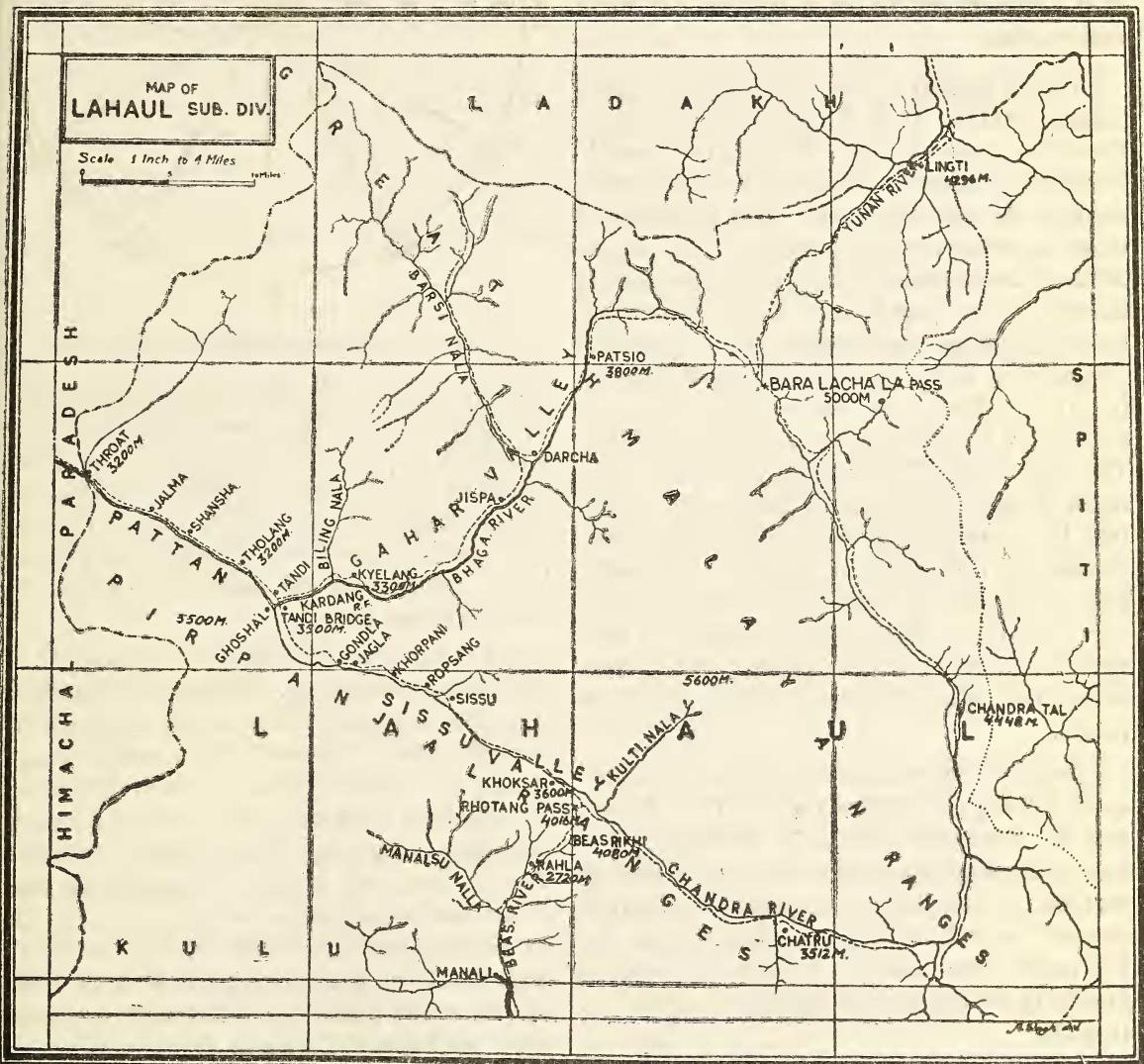


Fig. 1. Map of Lahaul sub-division.

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is of great botanical interest. The area was earlier explored by Aitchison (1868) and Watt (1881) who published short accounts of the botany of the western parts. In recent years, Joshi (1952), Rau (1960) and Nair (1964) published tour notes on various parts of the valley. As a part of a planned programme of study of the vegetation, particularly economic plants of the area it was surveyed during 1964, 1970 and 1973. This paper presents the results of these explorations.

**Physical aspects:** The tract has a highly rugged terrain. It is bounded by the main Himalayan axis in the north, the middle Himalayan ranges in the south and connecting links in the east and west. The elevation of these mountains range between 4187 m and 7000 m above mean sea level. The area is drained by the river Chenab and its two tributaries Chandra and Bhaga. The tributaries originate at Baralacha pass at about 5050 m (a.s.l.) and flow in a south-westerly direction enclosing a triangular mass of lofty mountains. The main axis of the central mass lies from north to south with a branch going west. These two lines are fringed with lateral spurs, the intervening valleys having glaciers. The major part of the area is barren with highly precipitous mountain slopes and glaciers. Cultivation is restricted to the lower parts of river valleys having an altitude of 3100 m to 3800 m (a.s.l.).

**Climate:** The maximum temperature recorded at Kelong (alt. 3600 m) is 23.1°C in August and the minimum—10.3°C in February. The enormous mountain ranges act as a barrier to monsoon currents and consequently the average summer rainfall hardly exceeds 15 cm. On the other hand there is heavier precipitation averaging 294 cm per year during winter months (Fig. 2).

**Vegetation:** A low rainfall during summer, a long period of gelation, precipitous physio-

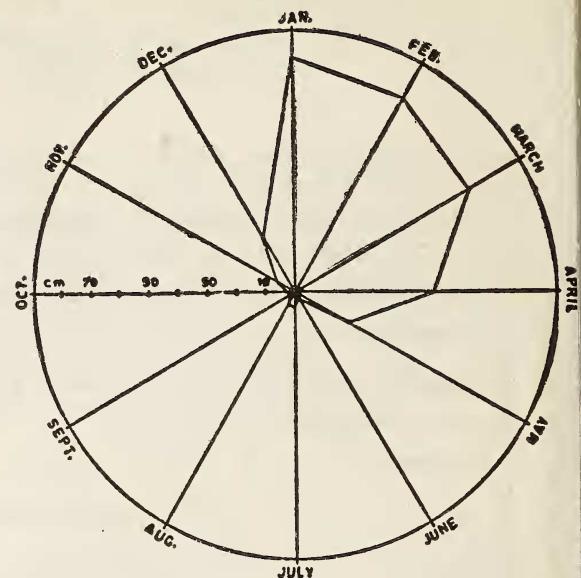


Fig. 2. Total precipitation pattern of Lahaul.

gnomy, shallow soil cover and high intensity of lopping and grazing have resulted in poor vegetation cover. The tree element is represented by *Betula utilis* and *Juniperus macropoda*, a high altitude conifer. A few trees of *Quercus semi-carpifolia* and *Pinus wallichiana* are sometimes encountered in sheltered localities in Chandrabhaga Valley.

The shrubby element consists of a number of semi-zerophytic species. *Hippophae rhamnoides*, an armed straggling shrub, along with *Berberis vulgaris*, *Ribes grossularia*, *Rosa webbiana* and species of *Rubus*, *Cotoneaster* and *Crataegus* form isolated thickets in the valley of Chandra and Bhaga and upto Jalma Kothi in Patten Valley. *Juniperus recurva*, *J. wallichiana* and *Rhododendron anthopogon* are the main shrubs on higher slopes. *Ephedra gerardiana* grows gregariously on southern aspects between Jispa and Baralacha pass on both the banks of Bhaga river and beyond Chatru in Chandra Valley.

The ground vegetation is greatly influenced by the soil conditions. The habitat ranges from

typical dry sandy or rocky on high precipitous slopes to water logged depressions. The major constituents under varying habitat conditions are as follows :

1. DRY SLOPES WITH LOOSE SANDY SOIL : The main herbs are *Artemisia maritima*, *A. dracunculus*, *A. vestita*, *Phlomis bracteosa*, *Cicer soongaricum*, *Lotus corniculatus*, *Lychnis fimbriata*, and species of *Astragalus*, *Verbascum*, *Origanum*, *Lotus* and *Cnicus*.
2. MOIST SLOPES WITH WATER SEEPING FROM ABOVE : *Iris kumaonensis*, *Lagotis glauca*, *Picrorhiza kurrooa*, *Anemone obtusiloba*, *Geum elatum*, *Adonis chrysocytathus*, *Primula sibirica*, *Polygonum chinensis*, *Anaphalis nubigena*, *A. cinnamomea* and *Ranunculus* spp.
3. 'DANGS' (FALLOW LAND NEAR CULTIVATED FIELDS) : *Chaerophyllum villosum*, *C. reflexum*, *Eremurus himalaicus*, *Aconitum heterophyllum*, *Bunium bulbocastanum*, *Heracleum candicans*, *Phlomis bracteosa*, *Thlaspi arvense*, *Capsella bursa-pastoris*, *Verbascum thapsus*, *Bupleurum falcatum* and species of *Ranunculus*, *Arabis*, *Artemisia* and *Caltha* species.
4. ORGANIC DUMPS NEAR ROAD SIDES AND VILLAGES : *Datura stramonium*, *Physochalaina praealta*, *Hyoscyamus niger*, *Physalis minima*, *Verbena officinalis* and species of *Papavar*, *Ranunculus*, *Lychnis*, *Amaranthus* and *Chenopodium*.
5. CREVICES OF MOIST ROCKS : *Onosma echiodes*, *Rheum palmatum*, *Bergenia ligulata* and a number of *Sedum* species.

The majority of plants flower during May to August and fruits mature by the month of October and dormancy sets in most of the species by first or second week of November.

*Cereal and cash crops* : The vegetative season being limited to about seven months between

April and October only one crop per year is harvested. 'Grisham' or naked barley (*Hordeum vulgare*) is the only cereal grown in the area, though cultivation of rice has been taken up recently in some low lying areas of Chandrabhaga Valley. Potato, Tobacco, Lentils, Buckwheat and Kuth (*Saussurea lappa*) are the main cash crops. Very large quantities of seed potato are produced in the area and exported to all parts of India. Lahaul has a monopoly in Kuth roots, large quantities of which are exported from India every year. Cultivation of hops (*Humulus lupulus*) has also been taken up recently.

*Ethnobotanical observations* : The local inhabitants, cutoff from the world during six months in a year and faced with the vagaries of climate depend on wild plants for many of their daily needs. During the survey, the following observations were made regarding the use of wild plants for various purposes by the local people.

1. *Plants used as substitutes for flour* : The chief food of Lahaul is potato and buckwheat. These are occasionally supplemented by the indigenously produced naked barley. Among the wild plants used for similar purposes are the tap roots of *Codonopsis ovata* (Ludut) and *Chaerophyllum villosum* (Meetha patis). These are dried, ground into flour and mixed with flour of buckwheat, barley or wheat.

2. *Wild plants used as pot herb and vegetable* : *Allium victorialis* Linn. (Linchi)

Young leaves, bulbs & young roots.

*Bunium cylindricum* Grossheim (Shingo)

Flowering tops.

*Cicer soongaricum* Steph.

Seeds & herb.

*Codonopsis ovata* Benth. (Ludut)

Roots & leaves.

*Eremurus himalaicus* Baker (Boe)

Young leaves.

- Morchella* sp. (Mpksha)  
Fructification.  
*Polygonum polystachyum* Watt. (Mushutzi)  
Flowering spikes.  
*Rheum palmatum* Linn. (Ravandchini)  
Young stems.  
*Sedum rhodiola* DC. (Shrolo)  
Tender shoots.  
*Sedum tibeticum* Hook. f. (Kindut)  
Young roots.  
*Taraxacum officinalis* Wigg. (Ganiathal)  
Whole herb.  
*Tragopogon major* Jacq. (Dudhi)  
Whole herb.  
(Local name is given in parentheses.)

3. *Fruits* : Cultivated fruit trees are few. Apple, Pear and Walnut have been introduced recently in Chandrabhaga Valley. The fruits of the following wild plants are commonly used by the local people.

- Cotoneaster disticha* Lange  
*Fragaria vesca* Linn. (Paljoo)  
*Hippophae rhamonides* Linn. (Starboo)  
*Pyrus buccata* Linn. (Litsee)  
*Pyrus malus* Linn. (Kushoo) local apple.  
*Ribes grossularia* Linn. (Kuchshoo)

#### 4. Plants used in local medicines :

*Aconitum heterophyllum* Wall. (Bonga)  
The roots are used as febrifuge and are given in decoction or boiled with tea.

*Bergenia ligulata* Wall. Rhizomes are made into a paste and applied over ulcers and bruises.

*Chaerophyllum villosum* Wall. (Meetha patis).  
The dried roots are used as carminative.

*Gentiana tenella* Rottb. Whole herb used as febrifuge in decoction.

*Hippophae rhamonides* Linn. (Starboo).  
Jelly made from the fruit is used in lung complaints.

*Myricaria germanica* Desv. The leaves are used as emollient applications to bruises, swollen joints and bruises.

*Pedicularis hookeriana* Wall. Roots are used in powder form for gastric troubles.

*Rheum palmatum* Linn. (Lacchu). Fresh herb juice used as purgative.

#### 5. Miscellaneous products :

In gompas and temples a great amount of incense is burnt. The major item used for this purpose is roots of *Saussurea lappa*. The roots of *Delphinium brunonianum* and *Morena brevifolia* (Boi) and fruits of *Juniperus macropoda* are also employed for this purpose. Roots of *Polygonatum cirrifolium* and *Saponaria* spp. are used for washing woollen clothes. Spices obtained from wild plants are, seeds of *Bunium cylindricum* and flowering tops of *Allium stracheyi*.

For fodder all sort of herbs, shrubs and trees are used. Chief among these being *Chaerophyllum villosum* (herb), *Cicer soongaricum* (herb), *Indigofera* sp. (leaves), *Phlomis bracteosa* (herb), *Salix* sp. (bark and leaves), *Populus* sp. leaves and a large number of alpine grasses.

#### Enumeration of the flowering plants :

275 species belonging to 152 genera and 46 families of Angiosperms and Gymnosperms have been collected from the area during a series of field exploration trips. The plants collected are enumerated in the following list. The specimens are kept in the Herbarium of the Regional Research Laboratory, Jammu—Tawi.

#### RANUNCULACEAE

- Aconitum heterophyllum* Wall.  
Koksar, YKS ; 8972.  
*Anemone obtusiloba* D. Don  
Rhotang Road, YKS ; 8721. BKK ; 12611.  
*A. polyanthes* D. Don  
Rhotang jot, BKK ; 12612.

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- A. rupicola* Camb.  
Gondla, YKS ; 8963.
- Aquilegia vulgaris* Linn.  
Jisparoad, YKS ; 8857. Tandi, BKK ; 12680.
- Caltha palustris* Linn.  
Rhotang, YKS ; 8717. Sissue, BKK ; 12671.
- Isopyrum thalictroides* Linn.  
Keylong (Biling area), YKS ; 8794.
- Delphinium cashmerianum* Royle  
BKK ; 12728, Rhotang.
- D. vestitum* Wall.  
BKK ; 12727 ; Billing Nallah.
- Ranunculus affinis* R.Br.  
Rhotang, BKK ; 12743.
- R. hirtellus* Royle  
Tandi-Shansha, YKS ; 8887.
- R. laetus* Wall.  
Sissue, BKK ; 12669.
- R. lobatus* Jacq.  
Rhotang, YKS ; 8981.
- R. munroanus* J. R. Drum  
Tandi-Shansha, YKS ; 8887.
- R. muricatus* Linn.  
Sansha village and throughout BKK ; 12729
- Thalictrum cultratum* Wall.  
Morung (Ka 34a), BKK ; 12816.
- T. foliolosum* DC.  
Gramphoo, Shansha ; 127230.
- T. minus* Linn.  
Kaza, BKK ; 12751.
- Trollius acaulis* Lindl.  
Rhotang top, YKS ; 8741.
- PAPAVERACEAE
- Corydalis cachemiriana* Royle  
Rhotang jot, BKK ; 12613.
- C. govaniana* Wall.  
Rhotang-Mari, YKS ; 8738.
- C. ramosa* Wall.  
Keylong, YKS ; 8792. Keylong ; BKK ; 12646.
- C. ramosa* Wall. var. *vaginans*  
Keylong, YKS ; 8871.
- C. tibetica* Hook. f. & Thoms.  
Sisso, YKS ; WN.
- Meconopsis aculeata* Royle  
Rhotang, BKK ; 12726.
- CRUCIFERAE
- Arabis alpine* Linn.  
Keylong—Jaloma, YKS ; 8873.
- A. amplexicaulis* Edgew.  
Tandi Village, YKS ; 8881.
- A. auriculata* Lamk.  
Jalma, BKK ; 127240.
- A. tibetica* Hook. f. & Thoms.  
Jalma, BKK ; 12738.
- Capsella bursa-pastoris* Moench  
Kardang. R.F., YKS ; 8812.  
Koksar, BKK ; 12632.
- Cardamine hirsuta* Linn. var.  
*sylvatica* Link.  
Tandi Village, YKS ; 8882.
- C. impatiens* Linn.  
Rhotang Pass, BKK ; 8750.
- Descurainia sophia* (Linn.) Webb.  
(= *Sisymbrium sophia* Linn.)  
Keylong, BKK ; 12653.
- Draba lanceolata* Royle  
Rhotang top, YKS ; 8743.
- Lepidium latifolium* Linn.  
Keylong, BKK ; 127132.
- L. ruderale* Linn.  
Keylong, BKK ; 12733.
- Megacarpaea polyandra* Benth.  
Mari, BKK ; 12380.
- Thlaspi arvense* Linn.  
Keylong, BKK ; 12654.

CARYOPHYLLACEAE

*Arenaria kashmirica* Edgew.

Gondla, BKK ; 12690.

*A. orbiculata* Royle

Koksar, YKS ; 8762.

Keylong, BKK ; 12619.

*A. serpylifolia* Linn.

Koksar, BKK ; 12734.

*Cerastium trigynum* Villars.

Koksar-Keylong, YKS ; 8770.

*Gypsophila cerastoides* D. Don

Koksar, BKK ; 12618.

*Sagina saginoides* (Linn.) Karsten

(= *S. procumbens* Linn.)

Rhotang, YKS ; 8733.

*Silene venosa* (Gibb.) Aschers.

(= *S. inflata* Smith.)

Keylong, BKK ; 12742.

TAMARICACEAE

*Myricaria germanica* Desv.

Gondla village, BKK ; 12676.

*M. elegans* Royle

Near Chandra river, BKK ; 12741.

MALVACEAE

*Malva rotundifolia* Linn.

Tandi village, YKS ; 8906

Koksar, BKK ; 12624.

*M. verticillata* Linn.

Gondla, BKK ; 12737.

GERANIACEAE

*Geranium nepalense* Sweet.

Sissie, YKS ; 8777.

*G. wallichianum* D. Don

Grampho (Koksar), BKK ; 12617.

*Impatiens amforata* Edgew.

Gondla-Sissie, BKK ; 12698.

*I. amforata* Edgew. var. *umbrosa* Edgew.

Keylong, YKS ; 8950.

SAPINDACEAE

*Acer caesium* Wall. ex Brand.

Rhotang (South aspect), YKS ; 8712.

LEGUMINOSAE

*Astragalus adesmiaefolium* Benth. ex Bunge

Kaza, BKK ; 12750.

*A. cicerifolius* Royle ex Bunge

(= *A. oprites* Benth. ex Baker.)

Kaza, BKK ; 12760.

*A. chlorostachya* Lindl.

Keylong, BKK ; 12662.

*A. himalayanus* Klotz.

Kunzum, BKK ; 12759.

*Cicer arietinum* Linn.

Keylong, BKK ; 12951.

*Indigofera pulchella* Roxb.

Rhotang top, BKK ; 8970.

*Lotus corniculatus* Linn.

Koksar, BKK ; 12628.

*Medicago sativa* Linn.

Sissie, YKS ; 8775. Keylong, BKK ; 12655.

*Melilotus parviflora* Desf.

Pattan valley, YKS ; 8940.

*Oxytropis thomsonii* Benth.

Koksar-Keylong, YKS ; 8767.

*Pisum sativum* Linn.

Keylong, BKK ; 12663.

*Thermopsis barbata* Benth.

Mari, BKK ; 12382.

*Trifolium repens* Linn.

Koksar, BKK ; 12639.

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ROSACEAE

*Cotoneaster microphylla* Wall. ex Lindl.  
Rhotang pass, YKS ; 8736.

*Cotoneaster racemiflora* Koech & May  
(= *C. nummularia* Fisch.)  
Keylong. Jisparoad, YKS ; 8930.

*Fragaria vesca* Linn.  
Mari, BKK ; 12754.

*Geum elatum* Wall.  
Rhotang top, YKS ; 8995.  
BKK ; 12610.

*G. urbanum* Linn.  
Rahla, YKS ; 8706.

*Malus sylvestris* Mill.  
(= *Pyrus malus* Linn.)  
Pattan valley, YKS ; 8942.

*Potentilla ambigua* Camb.  
Tandi-Shansha, YKS ; 8885.

*P. argyrophylla* Wall. var. *argyrophylla* Proper.  
Rhotang, BKK ; 12389.

*P. argyrophylla* Wall. var. *atrosanguinea* Lodd.  
Mari, YKS ; 8992. Rhotang, BKK ; 12700.

*P. bifurca* Linn.  
Tandi village, YKS ; 8889.

*P. gelida* C. A. Mey  
Chotadara, BKK ; 12752.

*P. multifida* Linn.  
Kunzum, BKK ; 12753.

*Potentilla nivea* Linn.  
Rhotang, YKS ; 8973. Keylong, BKK ; 8839.

*Potentilla sibbaldi* Hall. f.  
Billing nallha, YKS ; 8827.  
Rhotang, BKK ; 8980.

*Prunus armeniaca* Linn.  
Pattan Valley, BKK ; 12761.

*P. padus* Linn.  
(= *P. cornuta* Wall.)  
Keylong, YKS ; 8782.

*Pyrus foliolosa* Wall.  
Billing nallha, YKS ; 8856.

*Rosa webbiana* Wall.

Jispa, YKS; 8927 ; Koksar. Keylong, BKK ; 12645.

*Spiraea canescens* D. Don  
Kothi, BKK ; 12379.

*S. vestita* Wall. ex G. Don  
Pattan Valley, YKS ; 8941.

SAXIFRAGACEAE

*Bergenia ligulata* (Wall.) Engl.  
(= *Saxifraga ligulata* Wall.)  
Mari, BKK ; 12758.

*Ribes grossularia* Linn.  
Gondla. Keylong, YKS ; 8799.  
Jispa, BKK ; 12801.

*R. rubrum* Linn. Tinu bridge, BKK ; 8860.  
*Saxifraga diversifolia* Wall.  
Koksar, BKK ; 12755.

*S. flagellaris* Willd. ex Sternb.  
Batal, BKK ; 12755.  
*S. imbricata* Royle  
Keylong, YKS ; 8781.

CRASSULACEAE

*Sedum adenotrichum* Wall.  
Randi nallha, YKS ; 8984.

*S. crenulatum* Hk. f. & T.  
Rhotang near Rani nallha, BKK ; 8739.

*S. ewersii* Ledeb.  
Mari, YKS ; 8988. Koksar, BKK ; 12621.  
*S. quadrifidum* Pall.  
Rhotang top, YKS ; 8748.

*S. rhodiola* DC.  
Koksar, Keylong, YKS ; 8769.  
*S. tibeticum* Hk. f. & Thoms.  
Rhotang Jot, BKK ; 12608.

UMBELLIFERAE

*Bupleurum falcatum* Linn.  
Tandi. Shansha, YKS ; 8888.

*B. falcatum* Linn. var. *marginata* Wall.  
Gondla village, BKK ; 12678.

*B. jucundum* Koch.  
Thlong, BKK ; 12656.

*B. longicaule* Wall.  
Keylong, YKS ; 8953.

*B. longicaule* Wall. var. *himalensis*. Klotz.  
Kardang R.F., YKS ; 8810.

*B. maddeni* C. B. Clarke  
Koksar, BKK ; 12636.

*Carum bulbocastanum* Koch.  
Gondla, BKK ; 12675.

*C. carvi* Linn.  
Sissie-Gondla, BKK ; 12686.

*Chaerophyllum acuminatum* Lindl.  
Gondla, YKS ; 8965.

*C. villosum* Wall.  
Sissie, YKS ; 8774. Rhotang Jot, BKK ;  
12605.

*Ferula jaeschkeana* Vatke  
Keylong, YKS ; 8948.

*Heracleum candicans* Wall.  
Keylong, BKK ; 12652.

*H. thomsonii* C. B. Clarke  
Tandi, BKK ; 12684.

*Selinum tenuifolium* Wall.  
Mari, BKK ; 12778.

*S. vaginatum* C. B. Clarke  
Rhotang, YKS ; 8715.

*Vicatia coniifolia* DC.  
Shashoor R.F., YKS ; 8854.

#### CAPRIFOLIACEAE

*Lonicera quinquelocularis* Hardw.  
Keylong, BKK ; 12810.

*Viburnum cotinifolium* D. Don.  
Pattan village, BKK ; 12777.

#### RUBIACEAE

*Galium aparine* Linn.  
Koksar, BKK ; 12631.

*G. boreale* Linn.

Tinu-Keylong, YKS ; 8863.  
Glabotop, BKK ; 12383.

*G. verum* Linn.  
Tandi, BKK ; 12683.

#### VALERIANACEAE

*Valeriana hardwickii* Wall.  
Keylong, YKS ; 8807.

*V. wallichii* DC.  
Rhotang, YKS ; 8710.

#### DIPSACACEAE

*Morina coulteriana* Royle  
Sissie-tandi, BKK ; 12682.

*Scabiosa speciosa* Royle  
Koksar & Chatruo, BKK ; W.N.

#### COMPOSITAE

*Achillea millefolium* Linn.  
Gondla, YKS ; 8798. Keylong, BKK ; 14821.

*Anaphalis contorta* Hook. f.  
Koksar, YKS ; W.N.

*A. nubigena* DC.  
Rhotang, YKS ; 8998. Koksar, BKK ;  
12634.

*A. virgata* Thoms.  
Chhatruo, BKK ; 12819.

*Arctium lappa* Linn.  
Sissie, BKK ; 12670.

*Artemisia dracunculus* Linn.  
Koksar-Keylong, YKS ; 8761, Jispa, BKK ;  
12644.

*A. falconeri* C. B. Clarke  
Kazya, BKK ; 12811.

*A. laciniata* Willd.  
Kaza, BKK ; 12756.

*A. maritima* Linn.  
Jalma-Pattan, YKS ; 8935.  
Sissie-Keylong, BKK ; 12642.

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- A. moorcroftiana* Wall.  
Kaza, BKK ; 12770.
- A. sacrorum* Ledeb.  
Between Chhatru & Chotodara, BKK ; 12769.
- A. scoparia* Waldst. & Kit.  
Throat (Udaipur Valley), BKK ; 12659.
- A. siversiana* Ehrh. ex Willd.  
Jispa, BKK ; 12749.
- A. vestita* Wall.  
Keylong-Throat, BKK ; 12666.
- Carduus nutans* Linn.  
Pattan Valley, YKS ; 8920.
- Carpesium abrotanoides* Linn.  
Tandi, BKK ; 12809.
- Cirsium arvense* (Linn.) Scop.  
(= *Cnicus arvensis* Hoffm.)  
Keylong, BKK ; 12658.
- Cnicus wallichii* DC.  
Billing Pingpa, YKS ; 8832.
- Cousinia thomsoni* C. B. Clarke  
Koksar, YKS ; 8759.
- Echinops cornigerus* DC.  
Koksar, BKK ; 12748.
- Erigeron alpinus* Linn.  
Tandi, BKK ; 12805.
- E. multiradiatus* Benth. & Hook f.  
Rhotang, YKS ; 8709. Gondla, BKK ; 12685.
- Inula racemosa* Hook. f.  
Jalma, BKK ; 12768.
- I. royleana* DC.  
Pattan Valley, YKS ; 8919.
- Koelpinia linearis* Pall.  
Kardang R.F., YKS ; 8803.
- Lactuca dissecta* D. Don  
Pattan Valley, YKS ; 8945.
- L. tatarica* C. A. Meyer  
Chokhung (Throat), BKK ; 12764.
- Leontopodium alpinum* Cass.  
Pattan Valley, YKS ; 8894.
- Myriactis nepalensis* Less.  
Mari, YKS ; 9132.
- Saussurea lappa* C. B. Clarke  
Keylong, YKS ; 3368, Thlong, BKK ; 12657.
- S. jacea* C. B. Clarke  
Rhotang, YKS ; W.N.
- S. sorocephala* Hook. f. & Thoms. ex C. B. Clarke  
Morung ; BKK ; 12763.
- S. taraxacifolia* Wall.  
Jispa Kothi ; BKK ; 12767.
- Senecio chrysanthemoides* DC.  
Keylong, BKK ; 12667.
- S. pedunculatus* Edgew.  
Tandi, YKS ; 8905.
- Sonchus arvensis* Linn.  
Tandi-Keylong, YKS ; 8787.
- Sonchus oleraceus* Linn.  
Keylong, BKK ; 12649.
- Tenacetum gracile* Hook. f. & Thoms. ex Hook. f.  
Tandi, YKS ; W.N.
- Taraxacum officinale* Wigg.  
Koksar, YKS ; W.N.
- Tragopogon gracilis* D. Don  
Sissue, BKK ; 12692.

CAMPANULACEAE

- Codonopsis ovata* Benth.  
Tandi-Gondla, BKK ; 12689.

ERICACEAE

- Cassiope fastigiata* D. Don  
Rhotang top, YKS ; 8746.
- Rhododendron campanulatum* D. Don  
Rhotang, YKS ; 8138.
- R. hypanthum* Hook. f.  
Rhotang top, YKS ; 8996.

PRIMULACEAE

- Androsace rotundifolia* Hardw.  
Keylong, YKS ; 8788.
- A. sarmentosa* Wall.  
Mari-Rahla ; BKK ; 8989.
- A. sarmentosa* Wall. var.  
*primuloides* D. Don  
Rhotang South slopes, YKS; 8718.
- A. sempervivoidea* Jacq. ex Duby.  
Rhotang, YKS ; 9000. BKK ; 12609.
- Primula denticulata* Smith  
Rhotang top, YKS ; 8740.
- P. involucrata* Wall.  
Koksar-Keylong, YKS ; 8764.
- P. macrophylla* D. Don  
Mari-Rhotang ; YKS ; 8708.
- P. minutissima* Jacq.  
Rhotang, YKS ; 8744.
- P. nivalis* Pall.  
(= *P. stuartii* Wall.).  
Rhotang, BKK ; 12606.
- P. sibirica* Jacq.  
Rhotang Jot, BKK ; 12615.

OLEACEAE

- Fraxinus xanthoxyloides* Wall.  
Jisparoad—Baralacchapass, YKS ; 8922.

GENTIANACEAE

- Gentiana kurroo* Royle  
Rhotang, BKK ; 12776.
- G. moorcroftiana* Wall.  
Chokhung, BKK ; 12775.
- G. tenella* Rottb.  
Chhatru, BKK ; 12774.
- Swertia chirata* Wall.  
Mari, YKS ; 8553.
- S. purpurascens* Wall.  
Rhotang top, YKS ; 12735.

BORAGINACEAE

- Cynoglossum denticulatum* A. DC.  
Tandi, BKK ; 12806.
- C. micranthum* Desf.  
Throat, BKK ; 12731.
- Eritrichium strictum* Decne.  
Tandi-Gondla, BKK ; 12691.
- Lindelofia angustifolia* A. Brand.  
Tandi, YKS ; 8911.
- L. spectabilis* Lehm. var. *falconeri*  
Keylong, YKS ; 8780.
- Myosotis sylvatica* Hoffm.  
Tandi-Gondla, BKK ; 12385.
- M. stricta* Link  
Kardang Reserve forest, YKS ; 8814.
- Tandi*, BKK ; 12687.
- Onosma echiooides* Linn.  
Koksar, YKS ; 8750.

CONVOLVULACEAE

- Convolvulus arvensis* Linn.  
Keylong, YKS ; 8913. Itingri, BKK ; 12648.
- Cuscuta reflexa* Roxb.  
Koksar, BKK ; 12762.

SOLANACEAE

- Hyoscyamus niger* Linn.  
Koksar, YKS ; 8771. Keylong, BKK ; 12620.
- Solanum tuberosum* Linn.  
Keylong throughout, BKK ; 12664.
- Physochlaina praealta* Miers  
Tandi, BKK ; 12829.

SCROPHULARIACEAE

- Digitalis lanata* Ehrh.  
Cultivated, BKK ; W.N.
- D. purpurea* Linn.  
Glaboo ; BKK ; 10595.

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*Euphrasia officinalis* Linn.

Pattan Valley, YKS ; 8900, Gondla, BKK ; 12674.

*Lancea tibetica* Hook. f. & Thoms.

Koksar, BKK ; 12747.

*Pedicularis pectinata* Wall.

Billong longpa, YKS ; 3838. Thiong, BKK ; 12660.

*P. pectinata* Wall. var. *pyramidalis*

Pattan Valley, YKS ; 3944.

*Picrorhiza kurrooa* Royle ex Benth.

Rhotang, YKS ; 8723.

*Scrophularia calycina* Benth.

Koksar, BKK ; 12765.

*S. lucida* Linn.

(= *S. decomposita* Royle ex Benth.)

Koksar, BKK ; 12625.

*Verbascum thapsus* Linn.

Koksar-Keylong, BKK ; 12641.

*Veronica anagallis* Linn.

Koksar, BKK ; 12780.

*V. biloba* Linn.

Kardang R.F., YKS ; 8816.

Pattan Valley, BKK ; 8899.

*Wulfenia amherstiana* Benth.

Rhotang, BKK ; 12779.

LABIATAE

*Calamintha clinopodium* Benth.

Gondla, BKK ; 12673.

*Elsholtzia cristata* Willd.

Throat, BKK ; 12802.

*Lamium album* Linn.

Mari-Glabolop, BKK ; 12388.

*Mentha longifolia* Huds.

(= *M. sylvestris* Linn.)

Sissue, BKK ; 12693.

*Nepeta discolor* Royle ex Benth.

Keylong, YKS ; 12253.

*N. eriostachys* Benth.

Keylong, YKS ; 8869.

Gondla, BKK ; 12672.

*N. spicata* Benth.

Keylong, YKS ; 8912. BKK ; 12681.

*Origanum vulgare* Linn.

Tandi-Gondla, BKK ; 12681.

*Phlomis bracteosa* Royle ex Benth.

Rhotang, BKK ; 12614.

*Prunella vulgaris* Linn.

(= *Brunella vulgaris* Linn.)

Gondla. Sissue, BKK ; 12697.

*Thymus serpyllum* Linn.

Koksar, BKK ; 12626.

OROBANCHACEAE

*Orobanche epithymum* DC.

Keylong, YKS ; 8913.

SELAGINACEAE

*Lagotis glauca* Gaertn. var. *cashmeriana* Royle.

Rhotang, BKK ; 12607.

*L. glauca* Gaertn. var. *kunawarensis*

Rhotang, YKS ; 8742.

*Gymnandra stolonifera* Koch.

(= *Lagotis stolonifera* Koch.)

Rhotang, YKS ; 8982.

PLANTAGINACEAE

*Plantago brachyphylla* Edgew. ex Decne

Rhotang (South slopes), YKS ; 8714.

*P. major* Linn.

Sissue, BKK ; 12694.

*P. tibetica* Hook. f. & Thoms. ex Hook. f.

Kardang R.F., YKS ; 8818.

CHENOPodiaceae

*Chenopodium album* Linn.

Keylong, BKK ; 12643.

*C. botrys* Linn.

Keylong, YKS ; 8947.

Pattan, BKK ; 8898.

*C. foliosum* (Moench.) Aschers.

Koksar, BKK ; 12629.

*C. murale* Linn.

Keylong, YKS ; 8843.

*Corispermum hyssopifolium* Linn.

Kunzum ; BKK ; W.N.

*Salsola kali* Linn.

Morung ; BKK ; W.N.

POLYGONACEAE

*Fagopyrum cymosum* Meissn.

Kothi-Mari, YKS ; 9129.

*F. tataricum* (Linn.) Gaertn.

Pattan Valley, BKK ; 12736.

*Oxyria digyna* Hill.

Rhotang, YKS ; 8716. Koksar, BKK ; 12635.

*Polygonum affine* D. Don.

Billing nallha, YKS ; 8844, Koksar, BKK ; 12633.

*P. alpinum* All.

Keylong, YKS ; 8797. Sissue, YKS ; 8776.

*P. paronychioides* C. A. Mey

Tandi, YKS ; 8883. Koksar, BKK ; 12622.

*P. polystachyum* Wall.

Chhatruo, BKK ; 12817.

*P. vacciniifolium* Wall.

Chhatruo, BKK ; W.N.

*P. viviparum* Linn.

Keylong, YKS ; 8952.

*Rheum emodi* Wall.

Keylong, YKS ; 8789.

*R. palmatum* Linn.

Rhotang top, YKS ; 8732.

*Rumex nepalensis* Spreng.

Koksar, BKK ; 12630.

EELAEAGNACEAE

*Hippophae rhamnoides* Linn.

Keylong-Jispa, YKS ; 8931. BKK ; 12647.

*H. salicifolia* D. Don

Kardang R. F., YKS ; 8811.

URTICACEAE

*Cannabis sativa* Linn.

Keylong, YKS ; 8929.

*Urtica dioica* Linn.

Keylong, BKK ; 12650.

JUGLANDACEAE

*Juglans regia* Linn.

Pattan Valley, YKS ; 8925.

CUPULIFERAE

*Betula utilis* D. Don

Billing Nallha area, YKS ; 8828.

*Quercus semicarpifolia* Smith

Rhotang (South slopes), YKS ; 8713.

SALICACEAE

*Salix elegans* Wall.

Gondla-Sissue ; YKS ; 8958.

*S. flabellaris* Anderss.

Rhotang, YKS ; 12745.

*S. fruiticulosa* Anderss.

Billing langpa, YKS ; 8822.

Rhotang, BKK ; 8745.

*S. wallichiana* Anderss.

Gondla-Sissue, YKS ; 8962.

*S. lindleyana* Wall.

Rani nallha, YKS ; 8985.

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**GNETACEAE**

*Ephedra intermedia* Schrenk. & C. A. Mey

Tandi, BKK ; 12746.

*E. vulgaris* Rich.

(= *E. gerardiana* Wall.)

Tinue bridge, YKS ; 8867. Sissue, BKK ; 12693.

**CONIFERAE**

*Juniperus communis* Linn.

Shashoor R. F. (Keylong), YKS ; 8850.

*J. macropoda* Boiss.

Kardang R. F., YKS ; 8848. Keylong Lehroad, BKK ; 12651.

*J. recurva* Buch.-Ham. ex D. Don

Kardang R. F., YKS ; 8851.

**IRIDACEAE**

*Iris hookeriana* Foster

Rhotang road, YKS ; 8722.

*I. kaumaonensis* Wall.

Mari-Rhotang, BKK ; 12603.

**DIOSCOREIACEAE**

*Dioscorea deltoidea* Wall.

Glaboo-Kothi, YKS ; 9152.

**LILIACEAE**

*Allium sikkimense* Baker

Tandi-Gondla, BKK ; 12688.

**A. stracheyi** Baker

Tinu-Keylong, YKS ; 8865.

*Paris polyphylla* Smith

Rhotang, YKS ; W.N.

*Smilax parviflora* Wall.

Mandi-Kothi, YKS ; 9111.

*Trillium govanianum* Wall.

Koksar, YKS ; 8753.

**JUNCACEAE**

*Juncus bufonius* Linn.

Koksar, BKK ; 12766.

*J. himalensis* Klotz.

Kothi-Mari, YKS ; 5785.

*J. membranaceus* Royle ex D. Don

Tinue bridge, YKS ; 8861.

**CYPERACEAE**

*Carex atrata* Linn.

Morung, YKS ; 12773.

*Abbreviations* : W.N. = Without Number.

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